

REMARKS

The Examiner has required restriction of the pending claims under 35 U.S.C. § 121 to one of the following six groups:

- A. A field emission device manufactured by a method comprising introduction of silicon based, conductivity increasing, and conductive decreasing volatiles (claims 32-41);
- B. A field emission display device (claims 60-62; 67-69; 74-76; 81-83; 88-94);
- C. An electronic device manufactured by a method comprising introduction of silicon based, conductivity increasing, and conductivity decreasing volatiles (claims 42-50);
- D. An electronic device (claims 63, 64, 70, 71, 77, 78, 84, 85, 95-101);
- E. A flat panel display device manufactured by a method comprising introduction of silicon based, conductivity increasing, and conductivity decreasing volatiles (claims 51-59); and
- F. A flat panel display device (65, 66, 72, 73, 79, 80, 86, 87, 102-108).

The Examiner has indicated that if Group A, C or E is elected, Applicants must also elect one of the following species:

- I. Conductivity increasing volatile consisting of phosphine and conductivity decreasing volatile consisting of ammonia (claims 35, 40, 45, 50, 54, and 59).
- II. Conductivity increasing volatile consisting of phosphine and conductivity decreasing volatile consisting of methane (claims 36, 46, and 55).

III. Conductivity decreasing volatile including nitrogen or carbon (claims 39, 49, and 58).

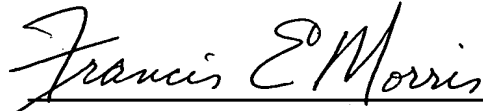
The Examiner contends that the inventions of Groups A-F are distinct, each from the other. In order to be fully responsive, Applicants hereby elect with traverse to prosecute the invention of Group C (claims 42-50 drawn to an electronic device manufactured by a method comprising introduction of silicon based, conductivity increasing, and conductivity decreasing volatiles). However, Applicants respectfully traverse the Examiner's division of the invention into the above six groups. Furthermore, Applicants elect species III. Applicants submit that claims 42, 45, 46, 49 and 50 are readable on species III.

Claims 32-41 and 51-108 have been canceled without prejudice as being drawn to non-elected inventions. Applicants reserve the right to prosecute the subject matter of the canceled claims in one or more related applications.

Applicants respectfully request that the above-mentioned remarks be entered and made of record in the file history of the subject application. Applicants believe no additional fees are due. However, if the Examiner determines otherwise, please charge such fees to Pennie & Edmonds LLP's Deposit Account No. 16-1150 (order no. 10732-053-999).

Date: February 18, 2003

Respectfully submitted,

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Enclosure

EXHIBIT A
PENDING CLAIMS

42. An electronic device having a substrate fabricated according to a process that includes forming on said substrate inside a deposition chamber an amorphous silicon-based film having a tensile stress of between about 10^8 and about 10^9 dyne/cm², the method comprising:

introducing a silicon-based volatile into the deposition chamber;

introducing into the deposition chamber a conductivity-increasing volatile including one or more components for increasing the conductivity of the amorphous silicon-based film; and

introducing into the deposition chamber a conductivity-decreasing volatile including one or more components for decreasing the conductivity of the amorphous silicon-based film; wherein the conductivity-increasing and conductivity-decreasing volatile are introduced into said deposition chamber at a flow rate ratio between about 1:1 and about 1:1000 conductivity-increasing to conductivity-decreasing volatile; thereby forming said amorphous silicon-based film on said substrate.

43. The electronic device of claim 42, wherein said deposition chamber is a CVD chamber or a PECVD chamber.

44. The electronic device of claim 42, wherein the flow rate ratio is selected to achieve a film resistivity of about 10^3 - 10^7 ohm-cm.

45. The electronic device of claim 42, wherein the conductivity-increasing volatile consists of phosphine and the conductivity-decreasing volatile consists of ammonia, the phosphine and the ammonia being introduced into the deposition chamber at a flow rate ratio in a range of about 1:1000 to about 1:10 (phosphine:ammonia).

46. The electronic device of claim 42, wherein the conductivity-increasing volatile consists of phosphine and the conductivity-decreasing volatile consists of methane, the phosphine and the methane being introduced into the deposition chamber at a flow rate ratio in a range of about 1:100 to about 1:1 (phosphine:methane).

47. The electronic device of claim 42, wherein the conductivity-increasing volatile includes an n-type dopant or a p-type dopant.

48. The electronic device of claim 42, wherein the amorphous silicon-based film is characterized by a band gap, and the conductivity-decreasing volatile includes a band gap increasing component that increases the band gap of the amorphous silicon-based film relative to a film formed under similar conditions but without the band gap increasing component.

49. The electronic device of claim 42, wherein the conductivity-decreasing volatile includes nitrogen or carbon.

50. The electronic device of claim 42, the method further comprising introducing into the deposition chamber a second conductivity-decreasing volatile, wherein the silicon-based film consists of silane, the conductivity-increasing volatile consists of phosphine, the first conductivity-decreasing volatile consists of ammonia, and the second conductivity-decreasing volatile consists of methane.

109. (New) The electronic device of claim 42, wherein said electronic device is a field emission device.

110. (New) The electronic device of claim 42, wherein said electronic device is a flat panel display device.